Cockroach Pest Management

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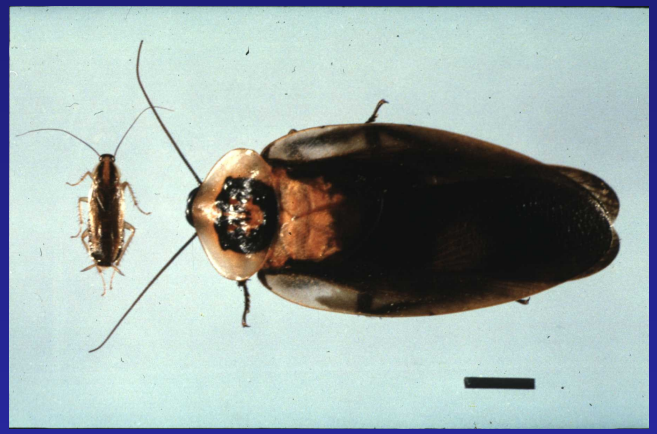
Cockroaches



Worldwide, there are 3500 species of roaches (69 in N. America)

Less than 1% of species are pests

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Common Pest Species

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American Cockroaches

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Oriental Cockroaches

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Other Non-Pest Cockroache

Cuban Roach

Harlequin Roach

Death's Head Cockroach

Giant Cave Cockroach

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Madagascar Hissing Roach

giving birth

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German Cockroaches

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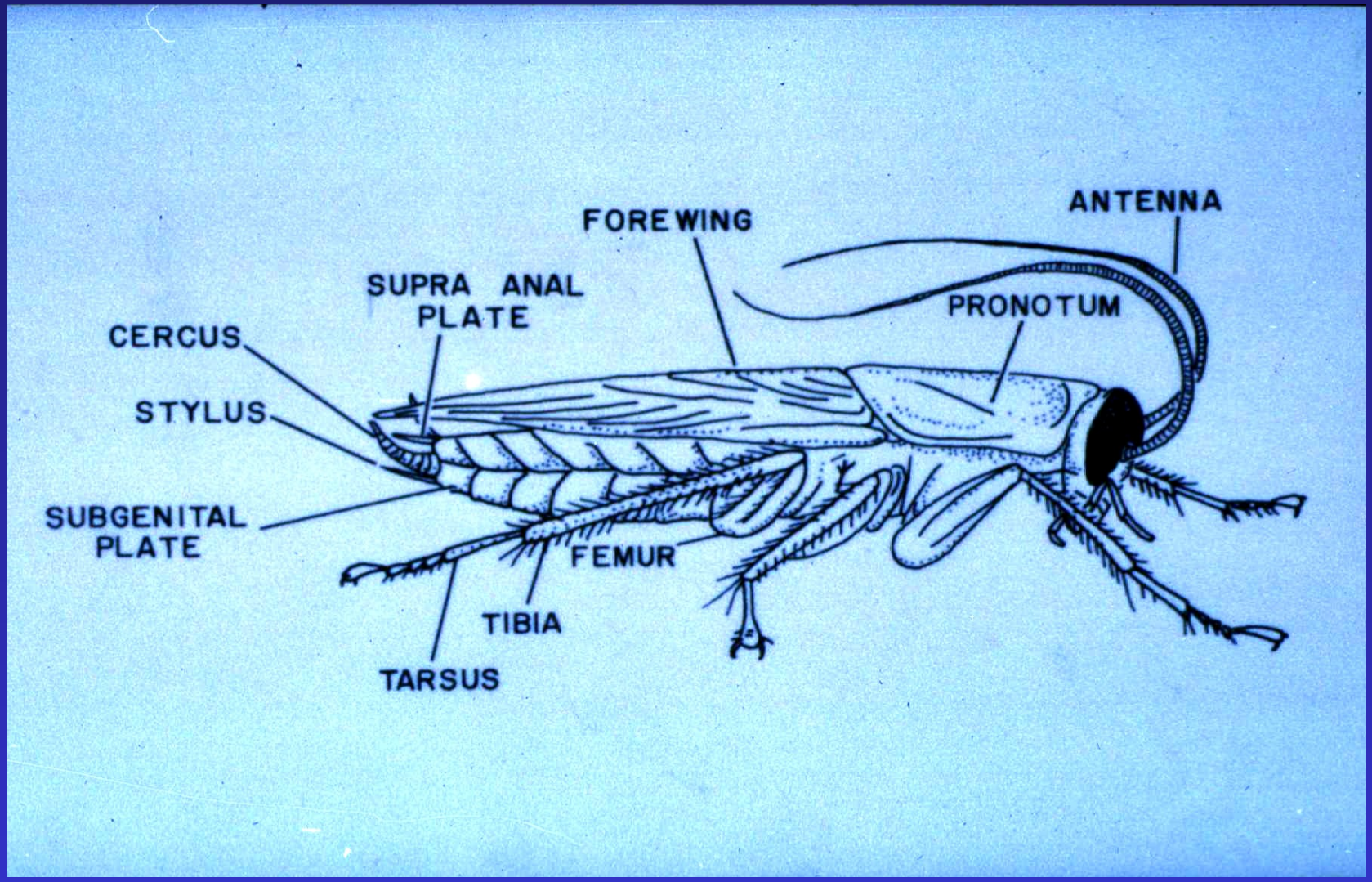
Cockroach Morpholog



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Cockroaches: Description and Habits

- German cockroaches are small, light brown insects with two dark longitudinal stripes on their thoracic shield
- Hide in harborages during the day and feed at night
- Cockroaches seen during the day may indicate high populations

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Cockroach Reproduction

- Females produce an egg capsule (ootheca) which is carried until the eggs are ready to hatch
- Each ootheca produces 20-40 nymphs
- Nymphs mature in 40-60 days
- Females produce about 6 oothecas in their lifetime (240 nymphs)
- One lab colony grew from 10 pairs of adults to 51,000 insects in 7 months

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Cockroach Developme

Roaches molt 6 – 8 times before becoming adults

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Cockroach life span

- German roaches live about 9 months: 3 as nonreproductive immatures, 6 as adults
- American roaches can live 2-3 years
- Madagascar hissing roaches can live as long as 5 years

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Cockroach Ootheca

Cockroaches: Health Con

Cockroaches infest food service areas, are u

and can mechanically transmit bacteria, viru protozoa, and nematodes

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Essential Requirements for Cockroaches

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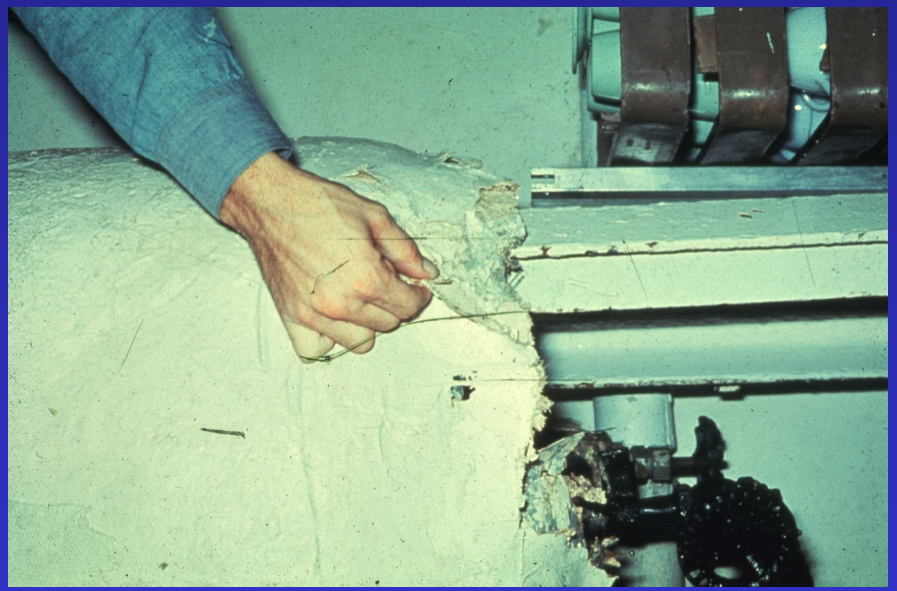
Cockroach Harborages

- Cracks and Crevices
- Food Preparation Equipment
- False Bulkheads
- Lagging
- Drains

Crack and crevice harborag

Meat Slicers
Bread Slicers
Mixers

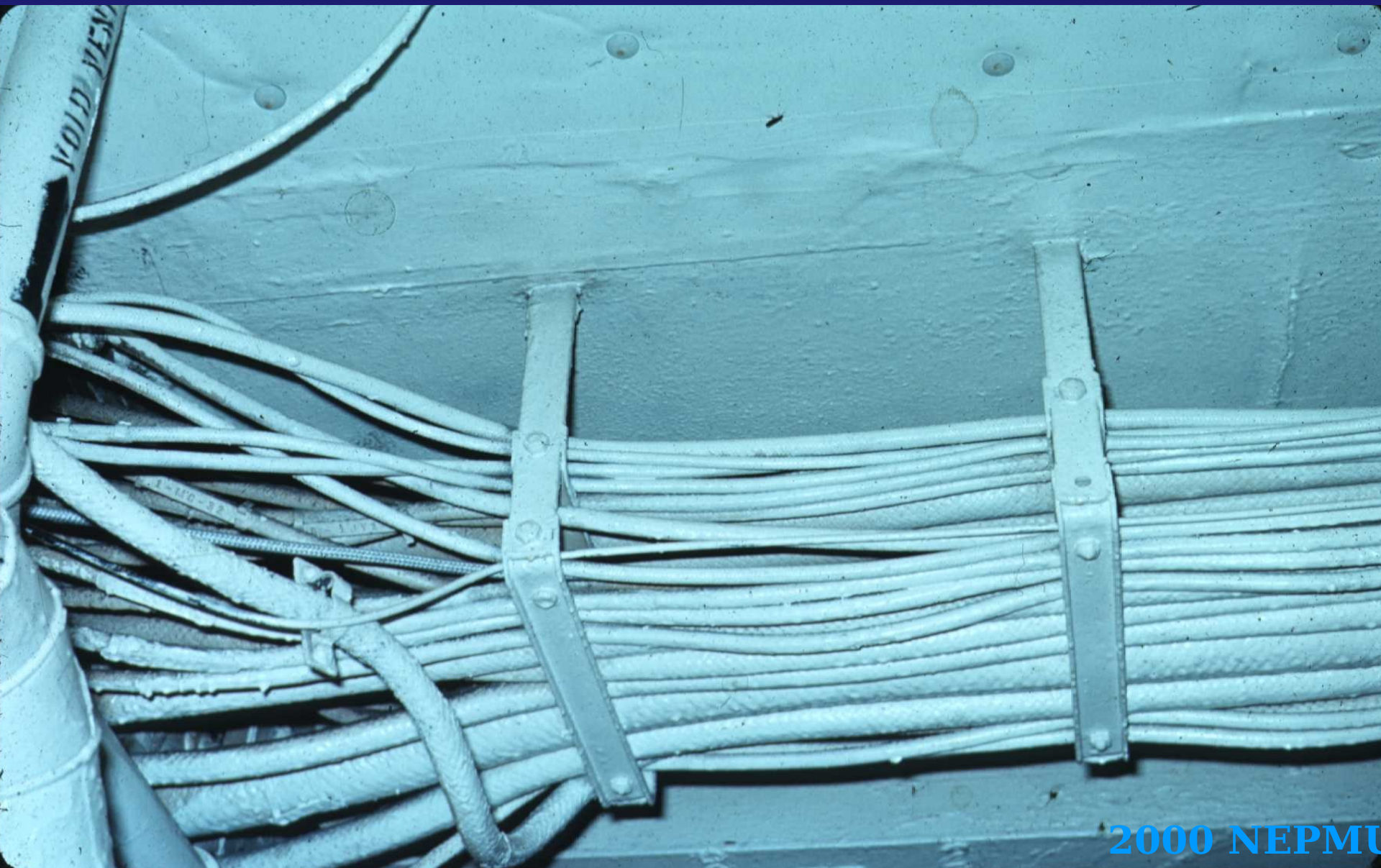
Harborages
Lagging



Cockroach harborages: Lagging on pipes

Cockroach harborages: Drains with food debris and water

Harborages: Wire bund



How many harborages can you ide

Cockroach Prevention

- Prevention of entry with pierside inspections
- Inspect potatoes and onions, fruits, soda cases, and cardboard boxes
- Do not spray directly onto food

Cockroach Prevention

- Harborage elimination:
  - seal all cracks and crevices
  - repair or remove torn and damaged lagging
  - eliminate cardboard in food service areas
  - eliminate shelf liners

Cockroach Prevention

- Sanitation
  - Eliminate water leaks
  - Store food and garbage in containers with tight fitting lids
  - Clean galley after food preparation
  - Prohibit food in berthing areas

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Eliminate standing wa

Garbage cans with tight fittin

Cockroach Surveys

- Identify harborages with a flushing agent like d-phen or PT 565
- Sticky traps can also be used (monitor for 7 days)
- Flush or place traps in common areas of infestation

Flushing Agents

PT 565

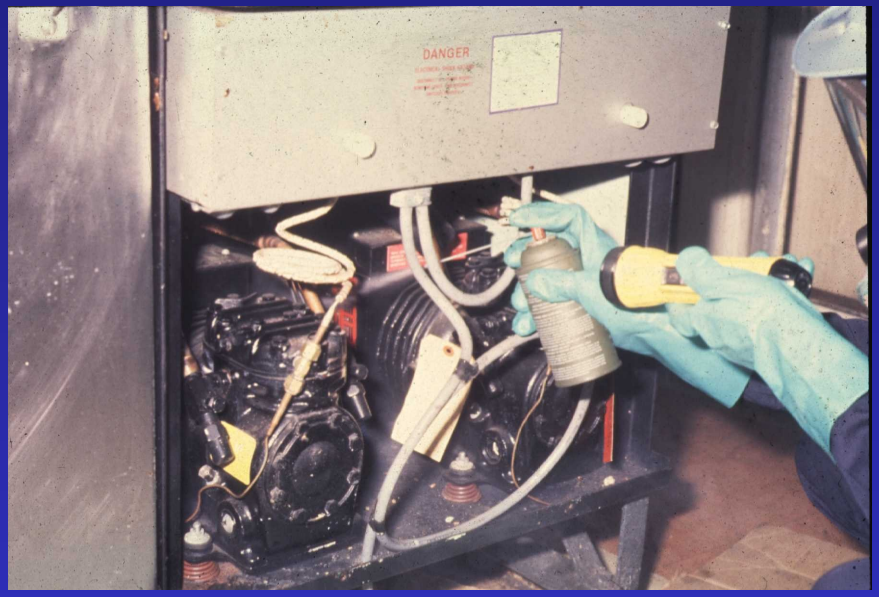
d-phenothr

Cockroach Surveys: Flushing

Crevices

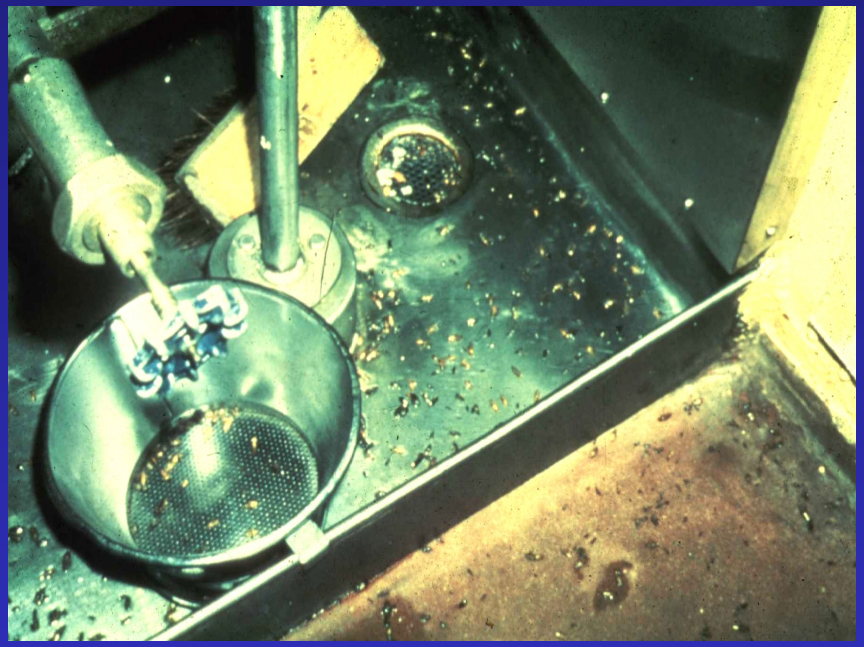
Drains

Cockroach Surveys: Flushing



Motor Housings Overheads

Cockroach Surveys: Flushing



Wait at least 10 min. to observe r

se pheromone traps to determin harborages and numbers

- Place near cockroach harborages
- Check regularly: daily in heavy infesta
  weekly in light infestation

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Pesticide Treatment: Before and After

- Food service department prepares space before treatment
- Ventilation should be secured
- After treating, wait at least 30 min. before entering space (several hours is better)
- Refrain from complete field day for 24 hrs.
- Sweep up all dead and dying roaches

After treatment

1. Sweep up all dead and dying roaches

2. Remove roaches and ootheca

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After treatment

3. Discard all dead and dying roac

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After treatment

Ootheca are not affected by pesticides and will hatch after treatment

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Combat Bait Stat

- Bait is a slow acting stomach poison (1.7% hydramethylnon
- 1-2 weeks to see results

Combat Bait Stations

- Place bait stations horizontally where roaches harbor, feed, travel, or have been seen
- Place bait stations in corners, behind equipment, in overheads, and under tables but not on the open deck
- Use 4-6 per 100 ft^2, including shelves and other surfaces

Combat Bait Stations

- **DO NOT spray insecticides on or near them**
- **DO NOT neglect bait stations---- survey every two weeks**

3 MONTH REMINDER
REPLACE ALL COMBAT DISCS
3 MONTHS AFTER PLACEMENT
PEEL OFF THIS ROUND STICKER
and place in a convenient location.
Suggested locations:
on your calendar, on top of one of the visible
COMBAT® discs, on your refrigerator,
inside a kitchen cabinet door, etc.
TIME
TO REPLACE
COMBAT
Date:
(3 months after placement)
© 1991 Distributed by Combat Insect Control Systems,
1221 Broadway, Oakland, CA 94612
69774.000

Using Baits in Severe Infestations

- Bait stations are less effective---bait is consumed quickly unless stations are replaced frequently
- Empty bait stations become cockroach hotels
- Initial knockdown may be necessary prior to bait station placement

Sanitation around Bait Stations

- Sanitation is vital for bait stations to be effective
- Alternate food sources will neutralize bait station effectiveness
- Remind users of the space to practice good sanitation

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Perma-Dust (PT 240)

20% boric acid aer

- Residual crack and crevice treatment
- Good for false bulkheads, voids, equipment bases and legs
- Gut poison
- Non-repellent---good complement to Combat bait stations

Maxforce
Roach Killer Bait Gel

Hydramethylnon kills by inhibiting ATP formation; Fipronil kills by blocking GABA gated chloride channels

Other Gel Bait Formulations

- Boric Acid
- Abamectin

Gentrol

Insect Growth Regulator (IGR)

- Hormone analog
- Sterilizes adults
- Causes wing deformities
- Liquid and point source

German roach with deformed wings: Mutation or IGR?